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The analysis of the influence of the intellectual capital on the results of the commercial activity of financial institutions

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Abstract. Developing (underdeveloped) countries are territories of slow economic growth (catch-up growth). Perspectives of their economic growth largely depend on developing and introducing financial and technological innovations in the sphere of the financial markets. The level and quality of those innovations should enable provision of faster growth of the financial sector of the national economy by rising stability and effectiveness of the financial institutions. Powerful and stable financial sector is the basic element for attracting investments and upsurge of liquidity in the economic system of a developing country that aims to have developed economy. Intellectual capital is the most important of the fundamental factors of production in the financial sphere. It is a catalytic element of the process of the economic development. From this position, the researchers' collective develops and presents a mathematical model which characterizes the connection between the intellectual capital and financial results of the commercial activity of financial institutions. The model is applied in the analysis of the activity of financial institutions that are part of the EEU.

1. Introduction

According to an approach firmly established in science and practice, hard assets and financial assets are reckoned among major production factors. Therefore, tangible assets are traditionally considered to be the most important resources of any business, since they form company's competitive advantages and create its added value.

We uphold an opposite position stating that at this particular historical moment intellectual capital matters the most for an efficient functioning of an economic system and increase of quality level of goods and services production.

The current epoch is a period of transition to a postindustrial society, characterized by the highest level of priority given to intellectual capital instead of hard assets or financial capital. Due to scientific and technical progress and a major change of a social consumption focus, a new production method was introduced into the global economic system. High dynamics of IT field and consequential high consumption of digital gadgets and products have gradually shifted emphasis towards intangible production. In the given circumstances intangible capital becomes a dominant among other production factors.

Consequently, issues of interpretation, use and commercialization of intellectual capital become of high importance.

The main function of intellectual capital is to boost significantly company's growth of revenue basing on creation and implementation of required by the company systems of knowledge, objects and relations which, in turn, guarantee highly efficient business.

Usage of intellectual capital defines the pace and character of production technologies and products renewal which later becomes the main competitive advantage on the market. In fact, intellectual capital is a system of company's capital consistent intellectual advantages on the market. It is a catalytic element for the process of economic development.

2. Empirical basis and scientific hypotheses

A limited number of publications are devoted to research of intellectual capital as a dominant production factor. These publications widely observe theoretical and practical aspects of intellectual capital [1, 3]. These publications include research works by Bontis, Brennan, Doyle, Sveiby, Chen and other scientists. These papers study issues of intellectual capital structure, quantitative research and intellectual capital indicators, econometric evaluation of levels and methods of influence of intellectual capital on a company's total performance.

One of the main scientific restrictions of these studies is that they were conducted based on statistics of developed countries. As it follows, a very few number of applied scientific research is dedicated to research of backward countries' experiences. This situation is rooted to the fact that these countries are not only areas of slow economic development, but also they are characterized by delay in development of modern knowledge and business innovative activity.

The outcomes of research works support the thesis on a positive influence of intellectual capital on current business operations and resulting company's total performance. Nevertheless, these results also demonstrate impossibility to develop a unified methodology of intellectual capital measuring and its influence on company's performance evaluation procedures.

The results of these studies also highlight the fact that in a developed economy the level of intellectual capital influence on company's total performance is higher than the one in a developing economy. Yet it is the backward countries that require the most the research of all aspects of intellectual capital and development of its evaluation methods.

Moreover, an influence of intellectual capital on company's financial results is characterized by synergy effect of its structural elements.

In the context of modern economy quantitative methods of intellectual capital research define a degree of determinateness of company's financial results and its intellectual capital value.

Analysis of the conducted works' empirical base has demonstrated that there are methodological obstacles in the process of formulation of analytical model of intellectual capital. First off, there is no one opinion on the structure of intellectual capital. During its structural modulation the researchers include in it different constituent elements which differ by quantity as well as by quality. There are up to five components as a maximum. There are at least two components as a minimum. A three-components-model of intellectual capital came into the most widespread acceptance [1, 9]. One more methodological obstacle in intellectual capital modeling is an absence of a unified criterial approach to estimated figures which demonstrate intellectual capital's cost performance. In sum, a wide range of quantity, quality and cost indicators is used in research activities [2].

Our position tends to the concept of a three-component structure of intellectual capital. Specifically, we believe it is reasonable to distinguish the following structural elements of intellectual capital:

1. Human capital - company's ability to use the whole of its employees' intellectual capacities in order to get economic benefits. Employees' intellectual capacities include their inherent abilities based on knowledge, skills and expertise.

2. Relationship capital - company's ability to use resources which are related to company's external relationships aimed at gaining economic benefits. It includes such resources as

customers' loyalty, backward and distributor linkages, achieved business cooperation, goodwill etc.

3. Structural capital - company's ability to generate economic benefits by using independent results of employees' intellectual activity, where such results become company's property. This includes such self-standing items as patents, copyrights, trademarks and other non-material components considered by IFAC as intangible assets.

It should be noted, that application of the given structure is not unconditional and it should vary depending on branch, national and legal specialties.

3. Formulation of the problem and of the research methodology

The results of most studies in the field of intellectual capital are received basing on a major data extract. Therefore, existing evaluation models of intellectual capital and its influence on company's total performance have a wide application range, but they cannot be applied in specific (self-standing) economy sectors. A financial market can be seen as such specific economy sector. Disintegration of this sector is determined by specific production features. Firstly, no material product is produced at this market. Secondly, exactly intellectual production is the basis of production activity. In other words, in this economic field a non-material financial service is being provided.

The financial service is provided in form of investment consulting, investment management, that is via intellectual activity. Tangible assets fulfill an auxiliary function here; therefore intellectual capital is the most important production factor at this market. Results of other studies support the authors' opinion. Works by Peter Doyle confirm that in the structure of financial sector assets the main part is taken by structural capital (intangible assets) and relationship capital (brand, goodwill etc.) (table 1.) [5]. It should be stressed that in financial sector an amount of tangible assets is even less than in IT field (the field of absolute intellectual production).

Table 1. The assets structure of companies in different industries, %

	Tangible assets	Intangible assets	Relationship capital
Retail	70	15	15
Heavy industry	70	25	5
Municipal or urban engineering	70	30	0
Mechanical engineering	50	20	30
Pharmaceutics	40	50	10
Food industry & agriculture	40	5	55
Information technology	30	50	20
Financial markets	20	50	30

The financial market demands high level of technological effectiveness of operation processes carried out by financial and investment institutions. The technology of production process is provided by intellectual program products. In this context it is referred to products providing operational interaction of a financial service supplier and its consumer. Consequently intellectual aspects of the financial service production are implemented not only by means of direct intellectual activity, but also through the sale of intellectual program products.

4. Research subject, data being used, and construction of models

As research subject there were considered financial institutions and investment companies functioning at the financial market of the Eurasian Economic Union. It is defined by several

factors. First of all, this international union unites developing (backward) countries. Second of all, in these countries the operation of the financial market is synchronized by economic and legal characteristics. Consequently, the statistical data of these countries is comparable and the models offered by us are applicable to this whole macroeconomic agglomeration. As statistical data there were taken official analytic reports and databases of regulatory and supervisory authorities of EEU member countries [4, 6, 7, 8].

The authors offer two models. The first model allows to define the value of an investment company's intellectual capital:

$$A_{IC} = HC + \frac{IA + m}{T_{IC}} + \frac{B + GW}{T_C} \tag{1}$$

Where A_{IC} - value of investment company's intellectual capital;

HC - value of human capital equal to total costs on personnel, including wages, monetary and physical stimulating payments (bonuses, rewards etc.);

IA - value of intangible assets shown in IFRS;

m - costs for modernization and maintenance of intangible assets paid in the current period (month, quarter, year) which enhance the increase of assets' accounting value;

T_{IC} - residual amount of time periods (months, quarters, years) of use of intangible assets' objects;

$B + GW$ - appraised value of objects comprising relationship capital (brand, goodwill etc.);

T_C - number of years of company's existence since foundation or rebranding.

The second model allows to evaluate the extent of intellectual capital's influence on investment company's total performance. This model is based on calculation of operating income received from the use of intellectual capital in investment activity.

$$OI_{IC} = V_B k_B + R_t k_t + R_d - A_{IC} \tag{2}$$

Where OI_{IC} - operating income generated by use of intellectual capital;

V_B - volume of financial turnover of broker operations with the use of intellectual program products;

k_B - investment company's commission rate on broker operations;

R_t - financial result on trust management investment operations;

k_t - investment company's commission rate on trust management investment operations;

R_d - financial result from investment operations with own resources.

Using these models, we have calculated a value of operating income per value of intellectual capital involved in production activity. In this case the operating income value is equal to the value of earnings before interest and taxes (EBIT) in terms of intellectual production:

$$EBIT_{IC} = (V_B k_B + R_t k_t + R_d) - \left(HC + \frac{IA + m}{T_I C} + \frac{B + GW}{T_C}\right) \tag{3}$$

Besides that, in the frames of this research a Basic earning power (BEP) ratio was calculated by the authors, which characterizes profitability of intellectual capital use:

$$BEP = \frac{EBIT_{IC}}{A_{IC}} \tag{4}$$

5. Empirical results

As a result of calculations it was found that an average value of operating income from intellectual capital use in investment companies operation activity within the past 5 years on EEU financial market ranged from 78,8% to 93,5% from an investment company's total performance. Summing up, one can state that intellectual capital makes for over three parts of investment companies' total performance. It was also found that the financial market is an economic branch where intellectual capital possesses one of the highest profitability levels. It is also proved by the fact that in the frames of this study the maximum value of the Basic earning power ratio exceeded 1000 units.

6. Conclusion

In summary, we have presented two models which allow not only to evaluate the level of intellectual capital influence on financial institutions total performance, but also to define investment companies' intellectual capital value. The authors have confirmed and proved the thesis stating that intellectual capital is a major production factor in modern economic surroundings. Moreover, the calculations have demonstrated that intellectual capital is the most important production factor in the field of investment activity on the financial market.

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